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TI Applications of rheological modifiers and superplasticizers in cementitious systems
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AB The impact of superplasticizers and water sol.-polymers, i.e., rheol. modifiers, on the rheol. and performance of cement-based systems has been investigated. Combinations of water sol.-polymers and superplasticizers can be used to formulate grouts, mortars, and concretes with properties tailored for specific applications (e.g., post-tensioning grouts, injection grouts, oil field cement, and underwater concrete). Cement-based systems studied ranged from highly fluid injection grouts to cohesive, flowable, concretes suitable for underwater construction and repair applications. This paper demonstrates how the rheol. and performance characteristics of cement-based systems can be manipulated using superplasticizers (sulfonated melamine-formaldehyde condensate and sulfonated naphthalene-formaldehyde condensate) and rheol. modifiers. The performance properties of a rheol. modifier of high mol. wt. polysaccharide produced by fermn. (welan gum) are compared and contrasted with those of cellulose derivs. (hydroxyethyl cellulose and hydroxypropyl methylcellulose). Combinations of water-sol. polymers and superplasticizers can be formulated to produce a continuum of properties ranging from highly fluid, non-sepg. grouts to low-slump concretes with enhanced workability and water retention. Choice of the proper combination of superplasticizer and water-sol. polymer is detd. by the functional demands of each application.
ST rheol modifier polymer cement grout mortar; superplasticizer cement grout mortar rheol
IT Cement